

Samsung CLX-9350ND

35 PPM Color Copy • Print • Scan • Fax



Reliability	Excellent
Multitasking	Excellent
Administrative Utilities	Excellent
Feedback to Workstations	Excellent
Ease of Network Setup	Excellent
Print Drivers	Excellent
Applications Compatibility	Excellent
Scan Functions	Excellent
Color Print/Copy Quality	Very Good
Black Print/Copy Quality	Very Good/Excellent
Color Print/Copy Productivity	Good
Black Print/Copy Productivity	Good
Ease of Use	Excellent
Feature Set	Very Good
Security Features	Excellent
Environmental Features	Not Rated
Toner Yield	Good
Cost Per Page	Good
Value	Very Good

BLI RECOMMENDATION

The Samsung CLX-9350ND gave an impressive performance in its exhaustive BLI lab evaluation. The company's first multifunctional product to support A3 (ledger-size) originals and output, this 35-ppm model, which offers standard copy, network print and scan functions, as well as optional fax capabilities, scored very high marks across the board. In addition to proving highly reliable during its 150,000-impression durability test, the CLX-9350ND offers exceptional ease of programming. Its very well designed color touch-screen control panel not only tilts up and down but also slides left and right and features a choice of two excellent screens for copy functions. Also noteworthy are the unit's excellent multitasking capabilities and its image quality, which was rated Very Good to Excellent across all types of color and black print and copy output produced in the test. With a speed of 35 ppm in color and black, the CLX-9350ND demonstrated competitive overall productivity and scored high marks for attributes important to IT, including ease of network setup and administrative utilities. Adding to the package is a very strong feature set that includes above average maximum paper and memory capacities, the ability to integrate the unit with back-end applications via Samsung's embedded development platform, Eco copy and print modes that promote environmentally responsible output, and a number of features that assist with accessibility. A number of tools that can reduce costs by restricting users' access to color output contribute to this unit's overall value. Based on its outstanding performance in BLI's tests, BLI highly recommends the Samsung CLX-9350ND for an average optimum monthly volume of 5,000 impressions.

Test duration: Two months, including a 150,000-impression durability test.

Maximum monthly duty cycle¹: 150,000 impressions.

Average optimum monthly volume for models in this speed range: Up to 15,000 impressions².

¹ The maximum monthly duty cycle is the maximum volume, as specified by the vendor, that the unit is capable of producing in a month; however, it isn't recommended that the unit be run at this volume on a regular basis.

² Based on a survey conducted by BLI. When comparing models, note that this lower optimum volume was instituted in May 2007.

Strengths

- Highly reliable
- User-replaceable component design reduces or eliminates the downtime that would be required for service technicians to replace components
- Exceptional ease of use from the very well-designed control panel with choice of two screens; panel can be tilted up and down and moved left and right, aiding with accessibility
- Superior network device management utility rivals the best available and includes the ability to manage not just devices but user access as well, for example, to restrict color output; a monochrome-only driver and the ability to specify different color and black quantities for print jobs from the drivers can also reduce color output costs
- Quick, highly automated driver and utility installation, including automated driver distribution to multiple users' workstations
- Very good to excellent black print and copy quality ratings; very good color print output
- Scanned images of excellent quality in most modes; compact PDF mode to compress color file size
- Higher than average maximum paper capacity and support for paper weights up to 67 lbs. from both the drawers and bypass
- Above average maximum RAM and hard drive capacities
- Samsung's embedded development platform, enabling integration of the unit with third-party software applications to add functionality or customize the control panel
- Eco copy and print modes help organizations to promote environmentally responsible printing and copying
- Superior multitasking to many units

Weaknesses

- The job list accessible from the control panel holds only the last 15 jobs and the information can't be printed or exported
- Little guidance on the location of misfeeds/jams and how to remove them
- Replacing imaging units more difficult than with other devices, requiring two hands
- Job build for copy mode is cumbersome to use
- Below average cyan and yellow toner yields did not reach vendor's claimed yield
- Slower than average first-copy times in black mode when tested with the booklet finisher
- Help function not as useful as with some competitive systems; provides access to user manual (cumbersome navigation and reading)

TEST RESULTS AND OBSERVATIONS

+, – and ○ represent positive, negative and neutral attributes, respectively.



RELIABILITY

EXCELLENT

- + BLI tested two Samsung CLX-9350NDs, one with the stapling finisher and one with the booklet finisher. Each completed a 150,000-impression durability test with just two misfeeds and no malfunctions.
- + Because the drums and other components are designed so that they can be replaced by users, technicians don't have to be called to service the unit, leading to less downtime.



MULTITASKING

EXCELLENT

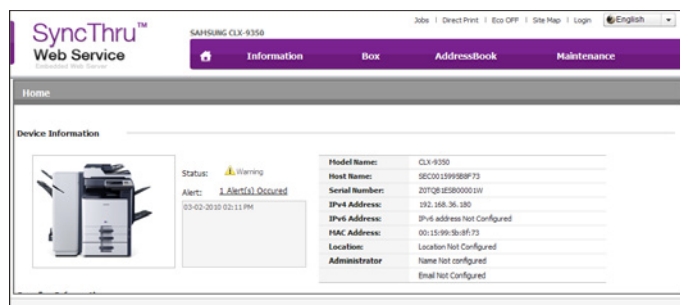
- + The Samsung CLX-9350ND enables users to program an unlimited number of copy jobs while another copy job or a print job is in progress.
- + BLI technicians observed no slowdowns between copy jobs and print jobs or during concurrent operations such as printing while scanning.
- + Unlike with most other devices, access to the control panel is not blocked while pages are being scanned through the document feeder; users can program additional copy or scan jobs even while pages of the current job are still being scanned, enhancing productivity.
- Settings from the previous job, such as quantity, are retained, rather than clearing immediately. Consequently, users must press a key ("Close") and then clear settings to program the next job.
- + By default, jobs are processed on a first-in, first-out basis, but an administrator can assign a priority level of from 1 (highest priority) to 16 (lowest priority) to the print or copy functions.
- + An interrupt function enables users to interrupt a job in progress to produce a priority job, with access to all features and functions; the interrupt job begins immediately (it doesn't wait for a set to complete).
- The engine took a competitive 47.82 seconds to download the 15 print files used in testing.



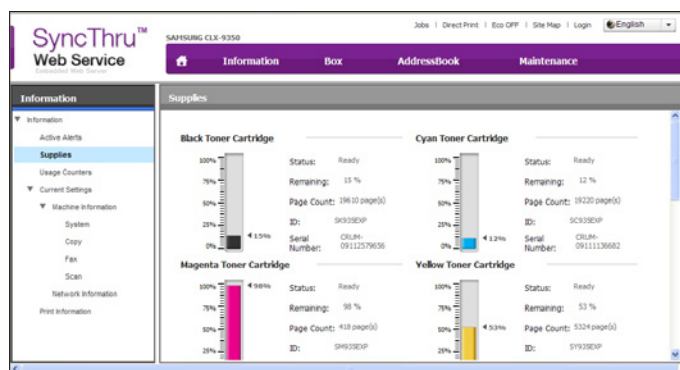
ADMINISTRATIVE UTILITIES

EXCELLENT

- + Administrative utilities for the Samsung CLX-9350ND include its embedded Web utility and SyncThru Admin 5 for management of all output devices—Samsung, as well as non-Samsung models—on the network.
- + Available as a free download, Samsung SyncThru Admin 5 is on par with the best network device management utilities in the class and superior to almost every other such utility BLI has tested. In addition to offering a more user-friendly interface than most competitors, it delivers more complete functionality, including built-in graphical reports and the ability to discover and monitor not just network-connected output devices but local devices connected to network PCs.
- + Free plug-ins for SyncThru Admin enable administrators to control access to device features (such as color printing), track usage by user or group and provide a map view of devices, capabilities not provided by some other competing utilities.
- + E-mail alerts of error conditions can be sent to multiple users via SyncThru Admin, but not via the Web utility.
- + The unit's Web utility offers a very straightforward, graphical design that's easy to navigate. It offers a wealth of information that's more precise than that offered by other devices, including detailed supply status information on the main screen and even more detailed information on the Information tab.



The unit's Web utility is easy to navigate.



Detailed supplies information includes toner gauges.

- + Destinations can be programmed via the Web utility. The CLX-9350ND's Web utility is one of few that enable programming of destinations via LDAP searches.
- + It's noteworthy that the Samsung unit's Web utility is one of very few that enables accessing destinations via LDAP.
- The Web utility enables direct printing of a single PDF, PRN or TXT file at a time; unlike some others, it does not support printing of XPS files, allow for downloading multiple files at a time or selecting/changing features such as number of sets, duplex or simplex, finishing, etc. In addition, a separate direct printing utility is included.
- Although the Web utility does not have a cloning capability to copy the settings or address book from one unit to many others all at once, this capability is available with SyncThru Admin.



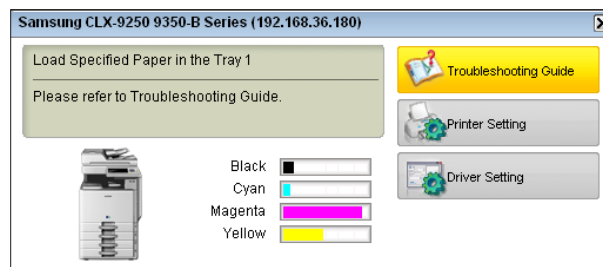
FEEDBACK TO WORKSTATIONS

EXCELLENT

- + The Smart Panel utility bundled with the unit provides pop-up messages notifying users of errors or warning conditions such as toner low, paper low, paper empty and offline. It also provides pop-up notification of when print jobs have been sent and when print jobs have been completed. The messages disappear after a few seconds, eliminating the need for users to close windows.
- Its icon on the taskbar changes to either an amber exclamation point or a red X to indicate warning or error conditions regarding device status, such as if there is a paper jam or if the unit is out of paper or out of toner; however, the slight color change on the small icon can be easily overlooked and indicates only that there is a problem, not precise details.
- Users can open the utility to get additional information on problems via flashing messages such as "Paper jammed at tray 1" and to indicate when the unit is out of or low on paper or toner or offline, as well as information regarding the size and amount of paper in the drawers.
- + The Smart Panel utility also has a link to a Job Monitor utility that enables users to view jobs in queue as well as a job history of the last 15 jobs.
- + The print driver contains a link to the status utility page that shows the paper supply remaining in the drawers, indicated in 20 percent increments.
- + A nice feature of the Smart Panel utility is the Troubleshooting selection, which provides instructions and animated videos illustrating how to perform such procedures as installing toner cartridges.
- + The utility also provides detailed toner gauges, via a bar that gradually moves from the right (for full) to the left as toner supply diminishes.
- + The utility provides a link to the Web utility (eliminating the need for users to enter an

IP address to access the utility), which provides a wealth of detailed device status information on supplies, including toner, paper and drums, as well as errors.

- + Users can receive an e-mail alert of copy job completion as well as e-mail alerts indicating that a scan-to-e-mail job is complete.
- + Also accessible from Smart Panel are links to the print driver to enable changes to default settings, links to the Web site for ordering supplies and links to the scan and fax manager.



Samsung's Smart Panel Utility



EASE OF NETWORK SETUP

EXCELLENT

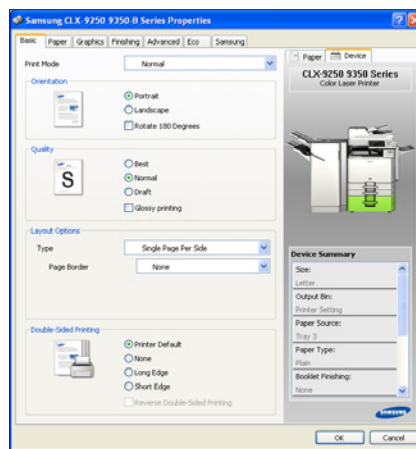
- + The drivers, User's Guide and Smart Panel utility are all contained on one CD, which auto-runs upon insertion in the drive. Users have a choice of installation methods. The Install Now method installs both the PCL and PostScript drivers, as well as the TWAIN and PC fax drivers in 11 clicks, which is fewer than most. A complete install choice enables both drivers, the Smart Panel status monitoring utility, Scan Manager and the Direct Print utility to be installed at once with 15 clicks, which is also fewer than average.
- The drivers automatically detect configured accessories without requiring additional clicks, and the port is automatically created following installation of the drivers.
- + Enhancing ease of setup is that print driver distribution to end users can be automated via SyncThru Admin, eliminating the need for an administrator to manually install drivers on each workstation.
- Network settings can be configured from both the control panel and the Web utility.
- + A function enabling an administrator to confirm that LDAP settings have been configured correctly is available via the control panel and the Web utility.



PRINT DRIVERS

EXCELLENT

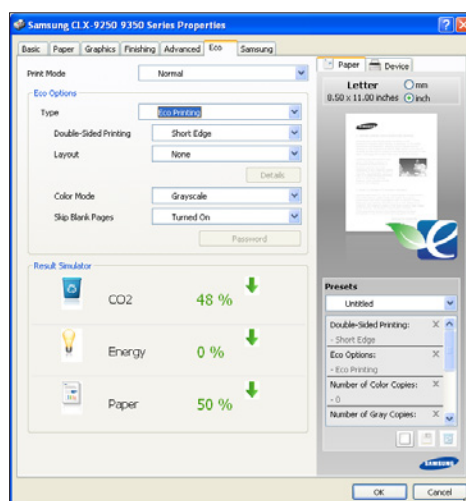
- Network printing is standard. The Samsung CLX-9350ND comes bundled with a PCL 6 driver, while a PostScript emulation driver is available as an option. The drivers support Windows, Linux and Mac operating systems.
- + Although it could be easily overlooked, a driver that allows for only monochrome printing is also included on the CD. This driver can be installed on the PCs of users who don't have a need to print in color to help reduce the costs associated with unnecessary color output.
- + Though the CLX-9350ND was not supported by Samsung's universal print driver at the time of BLI's test, support is slated to be available for this model. This driver enables users to print to multiple Samsung models, eliminating the need to have drivers for multiple devices installed on workstations.
- + The PCL and PostScript drivers are similar in appearance, which makes use more convenient for those who switch between them.



The well-designed driver features point-and-click selections.

- + The easy to use drivers feature a graphical interface, automatically detect and display device configuration, and enable point-and-click selection of paper drawers and output trays and enable users to save the settings for frequently used jobs.
- + Selected settings are displayed so users can make sure before printing jobs that they made the right selections.
- + Duplexing and commonly used finishing selections such as stapling and hole punching are conveniently selectable from the main screen of the drivers; with many other devices, users must access additional tabs to make these selections.
- Though not difficult, programming a booklet job requires 12 clicks, which is more than most competitive devices.

- + The print drivers offer a good feature set overall, including the abilities to print from up to three paper sources for a single job, specify different features (e.g., simplex, duplex or different paper sources) for different page ranges in a document and insert front and back covers, as well as secure print, proof print, print and hold, scheduled print, overlay, set and page numbering and watermarks. They also have a link to the Smart Panel utility, which when selected displays the paper size (though not orientation) and amount of paper remaining in each drawer.
- Color modes offered include full color and grayscale; although there is no selection for auto-color, the system automatically detects which pages are black only and which contain color and prints them accordingly.
- + Useful features include a help function, selections for envelope printing, the ability to import images to see the effects of selected color and image quality adjustments (most drivers show the effects of settings only on a default image) and Eco Mode. When users prepare to print a job, they can select Eco Mode to see the paper and energy savings they can achieve. The driver depicts the percentage of savings in energy consumption, CO₂ and paper. The default Eco Mode settings, which include duplexing and draft mode, can also be customized to fit the needs of the user.



The Eco Mode setting is the driver saves energy and shows users how much.

- + A unique and cost-saving feature enables users to select a different quantity of a document to be output in color and grayscale. For example, when printing a color document, users can select to print just one set in color and the remainder in grayscale mode, eliminating unnecessary color printing costs.
- + When printing multiple collated sets, file size remains the same regardless of whether collate is selected from the properties screen of the print driver or from the print screen within an application.
- + The unit supports simultaneous RIP and print, with printing beginning while the file is still being processed.



APPLICATIONS COMPATIBILITY

EXCELLENT

- + No problems were experienced with any of the test files used in the applications compatibility tests. Units are tested for compatibility on Windows XP platforms with Microsoft Word 2000, PowerPoint 2000 and Excel 2000, as well as Adobe Page-Maker 7.0, Photoshop 6.0 and Acrobat 8.0, using 25 application test files that contain text, graphics, halftone images, tables, etc., enabling BLI technicians to evaluate memory usage, file processing, font rendering and grayscale capability.



SCAN FUNCTIONS

EXCELLENT

- + The Samsung CLX-9350ND supports color and black scanning to network folders, PCs, e-mail, fax, USB drives and to storage on the device, as well as TWAIN-compliant scanning.
- + Destinations can be entered manually via the on-screen keyboard's large, comfortably spaced keys, or selected from up to six LDAP servers on the network by entering the first few characters at the control panel. Administrators can also program destinations via the Web utility.
- + Accessing addresses via LDAP is simple and requires 11 clicks to select one destination, which is fewer than required with most other devices.
- Unlike with most other systems, users cannot select more than one LDAP destination at a time; this results in a more than average number of keystrokes required to scan to multiple destinations (20 to two destinations), whereas most other systems require only one additional button press for each additional destination.
- Manually entered destinations or destinations accessed via LDAP cannot be stored locally in the device's address book; destinations can be programmed in the address book via the Web utility
- Unlike with some other systems, scanning to different types of destinations (e.g., fax and network) is not possible in one session.
- The keypad for scan data entry has an @ key, as well as domain keys such as .com or .net keys to make data entry easier.
- The system supports resolution settings ranging from 75 dpi to 600 dpi. File formats include PDF, TIFF and JPG.
- + In addition, the unit supports Secure PDF and XPS.
- + The unit supports scanning documents as searchable PDFs, so information can more easily be found in scanned documents
- + A blind CC field, which can be suppressed if desired, enables all outbound e-mails to be sent to an administrator, which helps ensure an audit trail.

- + The control panel displays a thumbnail view of the scan job's programmed settings, such as simplex or duplex.
- + The control panel has a selection to show a preview of the first page of the document to be scanned, which can be magnified; if a page was scanned incorrectly or the user realizes it is not the document he intended to scan, the document can be deleted.
- + BLI test technicians observed very good image quality of scans when scanning using most of the available compression modes.
- + Scan file size, at 109 KB for the black file, is smaller than average.
- Compact PDF compression reduces file size to 298 KB, which is competitive.
- Four scan pre-sets are available on the control panel for commonly used scan job types; however, frequently used destinations cannot be programmed as favorites.
- + The Samsung CLX-9350ND's scan speeds, at 47 ipm in black and color for single-sided originals and 32 ipm for two-sided originals, are higher than average and competitive, respectively.



PRINT/COPY QUALITY

Color Print/Copy Quality

VERY GOOD

- + In print mode, the Samsung CLX-9350ND produced color output that was rated very good for both business graphics output and photographic image output. In both print and copy modes, color business graphic output featured bright, saturated color and good consistency of coverage. In addition, the unit's production of light backgrounds is above average in both modes, while sharpness of fine details and production of pastel colors is average.
- + Although flesh tones are slightly reddish in appearance and smoothness of images is average, photographic image output in print mode is very good overall, with an above average color halftone range. Sharpness of fine details is average. Output in copy mode is similar, except flesh tones were more natural looking, without any of the reddish tint observed in print output.
- Color output remained relatively consistent throughout testing and was rated good overall for color gamut shift.
- + There are a number of image quality adjustments—RGB and CMYK balance, saturation adjustment, and so on—via the drivers and control panel.

Black Print/Copy Quality

VERY GOOD/EXCELLENT

- + Text was rated very good in both print and copy modes. It was judged to be above average for darkness and full character formation in both modes, with no break-up

of characters evident. No toner overspray was visible, except for an average amount under magnification. Text was rated above average for sharpness in print mode and average in copy mode. Similarly, the smoothness of curves and serifs was rated above average in print mode and average in copy mode.

- + Line art was also rated very good in both print and copy modes, with no toner overspray, except for an average amount when viewed under magnification. Production of closely spaced fine lines and consistency of line thickness are also above average in both modes. Circle formation and stair-stepping of diagonal lines were both average.
- + Halftone output is above average. Halftone fill is excellent in both print and copy modes, with smooth coverage—little if any graininess and no banding. Halftone range is excellent in copy mode, visible over a wide range with distinct separation between all levels. Halftone range is very good in print mode; although dot-fill levels below 5 percent were not visible, above that level, the range was very good, with distinct transitions between levels.
- + Black solids were rated excellent, exhibiting above average darkness and consistency of coverage in both print and copy modes.



PRODUCTIVITY

Color Print/Copy Productivity

GOOD

- When printing BLI's job stream in auto-color mode, the Samsung CLX-9350ND offers competitive tested speeds with both the PCL and PostScript drivers. While efficiency (percentage of rated speed) is below average when printing with PostScript, it's competitive when printing with the PCL driver.
- The Samsung CLX-9350ND also offers competitive speeds when printing sets in auto-color mode. In addition, the unit's efficiency, while competitive in simplex mode, is above average in duplex mode.
- The unit offers competitive tested speeds in auto-color mode in all three modes (1:1, 1:2 and 2:2), with efficiency ranging from competitive to above average.
- First-copy times of the CLX-9350ND are competitive from both the document feeder and the platen.
- When configured with the booklet finisher, the Samsung CLX-9350ND demonstrated competitive tested speed when producing booklets in auto-color mode, even though its efficiency is below average.

Black Print/Copy Productivity

GOOD

- The Samsung CLX-9350ND demonstrated competitive overall productivity from both the PCL and PostScript drivers, both in terms of tested speeds and efficiency, when

printing BLI's job stream, which simulates the type of traffic a shared office output device would likely receive.

- The device performed similarly when printing sets, with competitive speeds in both simplex and duplex modes. And although efficiency is below average in simplex mode, it's competitive in duplex mode.
- When copying in black mode, the CLX-9350ND's speeds and efficiency are competitive in all three modes (1:1, 1:2 and 2:2).
- Although the unit's efficiency when producing booklets in black mode is below average, its tested speed is competitive.
- First-copy times of the CLX-9350ND, as tested with the stapling finisher, are competitive both from the document feeder and the platen.



EASE OF USE

EXCELLENT

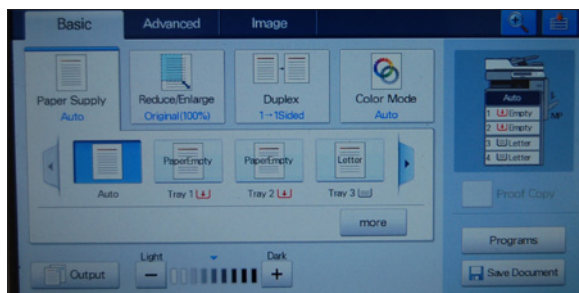
- + The Samsung CLX-9350ND's control panel is very well designed and offers exceptional ease of use. It features a bright, uncluttered 7-5/8" x 4-1/2" color touch-screen display with large buttons that are well labeled with easy-to-understand names and icons, allowing for intuitive programming of selections.
- + The Home screen contains large touch-sensitive buttons for all of the device's functions—copy, scan to e-mail, fax, scan to USB, scan to storage on the device, scan to server, scan to PC and machine setup—that are well-labeled with both easy-to-understand text and images. The Home screen can be set as the default screen if desired and it is accessible from any of the other screens by selecting the Home Screen button in the upper left corner of the touch screen.



The main screen is user-friendly and well-labeled.

- + The display can be adjusted for brightness via a scrolling adjustment that's conveniently located on the Home screen.
- + The control panel can be tilted up and down freely so that it can go from being nearly fully horizontal to nearly fully vertical, which aids with accessibility. And unlike most competitive units, it can also be slid to the left and right.

- + A lamp on the front of the drawers illuminates red to indicate a problem such as when paper is empty or there is a misfeed.
- + In addition, paper supply status is available on the main screen, while status on the amount of remaining toner is available on the Home screen and via a sub-menu.
- + The unit's control panel features a choice of two copy screens—Basic and Quick Copy, the latter of which allows programming of nearly all commonly used features (advanced as well as basic).



After a selection is made from the Basic screen, additional choices are displayed below it on the same screen.



The Quick Copy screen enables users to program many basic and advanced functions without having to navigate menus.

- + Although not all of the features required for typical copy jobs can be programmed from the main (Basic) copy screen, nearly all can be accessed from it. For example, the Basic screen includes choices for duplexing, paper source, reduction and enlargement and color mode. When the user selects any one of these functions, additional choices are presented below it; the user is not presented with another screen, as is often the case, but instead, additional choices appear on the same screen. This design eliminates the extra keystrokes involved in having to navigate back to other screens. Indeed, only seven keystrokes are required to program a typical copy job, which is fewer than with most competitive devices. Another benefit of this design is that all the other features of the Basic menu remain in the user's view, available for additional selections. A selection for Output on the lower left of the

screen is the only selection that brings the user to another screen to make additional selections.

- + The size of the buttons can be magnified.
- + Conveniently, pressing a key on the upper right of the screen displays selections for Copy, Quick Copy (the alternative copy menu that contains nearly all commonly used selections—advanced as well as basic), Scan to Network, Scan to Server and Scan to USB, which eliminates the need for the user to go back to the Home screen to access these functions.
- + Whereas comparable alternative screens from some other vendors are cluttered, the Samsung CLX-9350ND's Quick Copy screen is very well laid out, with large buttons identified by easy-to-understand text labels. It reduced the number of keystrokes required to program a booklet job from 10 using the Basic menu to just six, including the two keystrokes required to get from the Basic screen to the Quick Copy screen; BLI could not determine how many keystrokes BLI's basic copy job would require using the Quick Copy menu because there is no selection for the 78% reduction used for that job, nor is there the ability to select a specific magnification ratio.
- Although there is a Help hard key on the control panel, it is not as useful as those of competitive devices. It essentially provides access to a PDF of the user manual; after users link to the desired topic, they must zoom in and out and scroll back and forth and up and down to access needed information.
- + BLI observed, however, that when certain functions, such as ID card copy, are selected from the advanced tab, step-by-step instructions and illustrations guide the user through the process.
- + Although there is no job review selection on the control panel, selected settings for jobs are displayed on the screen.
- + A proof copy touch key is located on the main screen of the device, which is preferable to users having to navigate sub-menus for this information.
- + In addition to easy-to-make adjustments to color balance, saturation and contrast, simple one-touch adjustments allow users to select “warm,” “cool” or sepia output. In addition, users can replace colors with other colors or delete colors.
- When a misfeed occurs at the device, LEDs indicate general misfeed areas, which are accessed from the front and sides of the unit. Although text and animated graphics provide instructions for misfeed removal, the guidance is not dynamic (i.e., it doesn't change in response to actions the user takes) and it doesn't adequately indicate where the misfeeds are or provide step-by-step instructions on how to remove them.
- + Access to misfeed areas, however, is good and neither consumables nor the finisher needs to be moved away to access them. In addition, the drums are not susceptible to damage when removing misfeeds.

- The job list that is accessible from the control panel (and the Web utility) holds information on only the last 15 jobs (current and complete). In addition, the job list cannot be printed or exported to another application such as Excel, which is unlike other devices. However, an accounting plug-in available as a free download for SyncThru Admin provides for complete tracking of jobs.
- The job list includes the number of originals in copy and print jobs, which is a good feature not offered by some competitive units. It also indicates the number of pages (but not sets) output for the jobs, but the display does not count up or down as pages or sets are produced, nor is there a job time display, so users won't have a way to determine when a job will be done.
- Additional job lists available at the control panel include separate lists for current jobs (copy, print and scan) and completed jobs (copy, print and scan).
- + The hold key enables users to hold a job.
- + One or all jobs in queue can be deleted using the Delete key and users are prompted to confirm their desire to do. In addition, jobs can be moved up in the queue.
- + More detailed error history information than with competitive products is available to administrators and service technicians from the control panel.
- + Loading paper into the drawers and adjusting drawers for various sizes is very easy. Width and length guides slide easily into place and the system automatically detects a new paper size without the user having to make any adjustments either in the drawer or at the control panel. When paper is loaded in the bypass tray, the tray is automatically selected as the paper source and the paper size is automatically detected, though users must confirm it.
- + BLI test technicians observed that paper drawers, which have a quick release button on the handles, slide very smoothly in and out.
- + Replacing toner cartridges is simple; they simply slide into place. Although provided in the documentation, instructions for installing the cartridges are not included on the box for the supplies or in the packaging. It should be noted, however, that the instructional information provided via the Smart Panel utility tells users to shake the cartridge after removing the seal, which can result in toner spillage.



Toner cartridges simply slide into place.

- Replacing imaging units is more difficult than with most competitive devices. When opening the inner cover to access imaging units, the release handle does not stay locked in place; instead it snaps back nearly every time. In addition, BLI technicians noted that installing the imaging units requires two hands—one to push the unit into place and the other to lock the handle. Further, they have a tendency to easily spring back, dislodging from the unit in some cases.
- + Replacement of the fuser unit was simple and replacement of the ITB belt is typical of that of other units with user-replaceable belts.
- Indication of low remaining life on certain components, such as the ITB belt, occur too soon before end of life; the frequent flashing messages may cause users to prematurely replace components, resulting in higher waste and cost.
- BLI also observed problems with the graphical instruction card that comes wrapped around the imaging units. The tape that affixes it to the imaging unit stays on the imaging unit and must be removed. In addition, the instruction card illustrates removal of a strip in the wrong direction. Also, although it's included in step four of the graphical instruction sheet, several different test technicians failed to see the piece of tape that needs to be removed, as it is clear. Further, the orange knob was tricky to remove and pulling the protective cover sheet from the imaging unit requires a lot of force. Also, the instruction card tells users to first remove the seal and then shake the imaging unit back and forth five or six times; instead, users should shake it before pulling off the seal. Though it didn't always occur, some toner/developer spilled from the imaging unit several times.



FEATURE SET

VERY GOOD

- The CLX-9350ND offers standard copy and network print and scan functions (including Internet fax), and optional fax capability.
- + The fax option offers support for multiple lines.
- The unit has a competitive standard paper capacity of 1,040 sheets from two paper drawers plus a bypass tray with a competitive 100-sheet capacity.
- + With the addition of a dual 520-sheet cassette feeder and a 2,000-sheet high-capacity feeder, paper supply can be expanded to 4,180 sheets, which is higher than average.
- The unit supports a maximum output paper size of 12" x 18" from the drawers (12.6" x 17.8" from the bypass tray).
- + The standard drawers can accommodate paper stock ranging from 16-lb. bond to 120-lb. index, which is above average for the competitive group.
- + The unit's bypass tray accommodates stock up to 140-lb. index, which is above average compared with competitive units.

- + The CLX-9350ND has a competitive standard 1-GB of RAM that's expandable to 2 GB, which is among the highest for competitive models.
- + The capacity of the unit's hard drive, at 160 GB, is also above average.
- The unit features a standard reversing automatic document feeder with a competitive 100-sheet capacity, although the range of paper weights accommodated through the RADF, at 16 lbs. to 28 lbs., is not as wide as with most competitive models.
- + The control panel contains an embedded Web server, which enables remote access from a PC to view and make changes to control panel settings.
- + The Samsung CLX-9350ND incorporates Samsung's embedded development platform, which enables customization of the control panel and extends the functionality of the device by enabling direct communication between the device and back-end applications for document management and accounting.
- + The Samsung CLX-9350ND offers most of the features that would be expected for a model in this range, including N-up copying (from 2 to 32 images on the same page), zoom reduction/enlargement from 25% to 400% (as well as preset ratios), cover mode, transparency interleaving, automatic paper selection, automatic reduction and enlargement, image repeat, mirror image, edge and background erase, watermarks, stamping and poster mode.
- + The CLX-9350ND offers card shot, which makes it easy to copy both sides of an ID card onto a single page.
- + The system enables users to save the settings for 50 frequently used settings, which is competitive.
- + Users can select multi-copy runs of up to 9,999; most competitive models support multi-copy runs of only up to 999 copies.
- + The unit features standard front- and side-mounted USB ports; while one can be used for convenient printing from and scanning to USB memory devices, the other can be used to attach a full-size keyboard.
- Finishing options include a 1,250-sheet finisher and a 3,250-sheet booklet finisher, both of which can be configured with either a two-/three-hole punch kit or a two-/four-hole punch kit. Both can single or double staple up to 50 sheets in four positions. In addition, the booklet finisher can fold and center staple up to 15 sheets to make 60-page booklets. The unit lacks a smaller-capacity inner finisher, but offers manual convenience stapling.
- + An administrator can program default settings for an Eco-Copy mode (for example, 1:2 duplexing, black-only output and N-up) so that when the Eco hard button on the control panel is selected, users will have access to only these environmentally friendly selections.



SECURITY FEATURES

EXCELLENT

Administrator password length (characters)	63 alphanumeric
AUTHENTICATION	
Network user authentication	Yes
Windows	Yes
Novell NetWare NDPS	No
LDAP authentication	Yes
802.1x wireless authentication	No
Kerberos protocol support	Yes
Authentication via department or user ID codes that are registered on the machine	Yes
Number of codes	1,000
Restrict usage of color	Yes
Restrict usage of other features	Yes
Authenticated printing	Yes
Common Criteria Certification	Pending at EAL 3
Control panel lock/disablement	Yes
Digital user signature	Optional
Encrypted PDF mode/encrypted scanning	Standard
Encrypted secure print	Standard
Hard drive encryption	Standard
Hard drive lock	No
Hard drive overwrite	Optional
Max number of overwrites after every job	7 (9 with security option kit)
Overwrite method	Random number*
IP address filtering	Yes
IPsec	Yes
Job logs (e.g., activity monitoring, compliance auditing)	Yes via SyncThru
MAC address filtering	Yes
Password-protected mailboxes	Yes
Password-protected Web page	Yes
Port disablement	Yes
Protocol disablement	Yes
Removable hard drive	Yes
SECURE FAX	
Encrypted TX/RX	Yes (MMR)/Password-protected RX)
Fax forwarding	Yes
Fax line access prevention	Yes
Fax memory lock	Yes
Confidential mailbox	Yes
Secure print	Yes
Secure Sockets Layer (SSL)	Yes
SNMPv3 support	Yes
Third-party security features	INA
Transport layer security	Yes
Unauthorized copy prevention (secure watermark)	Yes
USB block	No
Additional security features	None

INA-Information not available

*Meets DoD 5220.28M, Australian ASCII 33 and German VSITR standards



ACCESSIBILITY FEATURES

NOT RATED

Accessibility handle	No
Braille label kit	No
Enlarged display mode	Yes (except fax)
Remote operator software	Yes
Tilting control panel	Yes
Voice guidance (audible instructions)	No
Voice operation (responds to voice commands)	No



ENVIRONMENTAL FEATURES

NOT RATED

Specified capable of running 30% post-consumer recycled paper	Yes
Specified capable of running 50% post-consumer recycled paper	Yes
Specified capable of running 100% post-consumer recycled paper	Yes
Instant/Quick Fusing	No
Duplexing	Yes
Toner-save mode	Yes
Energy-save mode/modes	Yes
RoHS compliant	Yes
In-house environmental policy for this unit?	Yes
Percent of product made from previous devices	0
Percent of product made from post-consumer materials	0
Percent of product made from pre-consumer materials	0
Percent of product made from bio-based materials	0
Product designed for recycling (easily disassembled, no binding agents)	Yes
Please list types of items that can be recycled	INA
Hardware remanufacturing program for this product	No
Toner cartridge recycling program for this product	Yes
Pre-paid label for return of toner cartridges/bottles for this unit	No
Toner recycling system	No
Ability to program features such as duplexing and auto shut-off over entire fleet	Yes
What tool can be used to do this?	Inherent in system (admin mode)
Green packaging materials for the product	Yes
Green packaging materials for its consumables	Yes
Packaging materials used	Paper, wood, PE
Typically, who is responsible for getting rid of packaging materials after products are shipped to the customer location (e.g., customers, dealers, shippers)?	Dealers, shippers
Eco-Label Certifications	
ENERGY STAR (after 7/1/09)	Yes
Other	Germany Blue Angel, Korea Eco Label

Tested energy consumption levels of the device (watts):	
Ready/Idle	<250
Energy-save	<50
Sleep mode	<10
During Printing	1,300 max
How fast can this product be programmed to go into the following modes (minutes):	
Ready/Idle	Immediately
Energy-Save	5 minutes
Sleep mode	25 minutes
Can the above settings be programmed by a walkup user?	Yes
First-print time out of sleep mode (seconds)	56
Emissions output from this device for the following substances (mg/h):	
Carbon Monoxide	INA
Nitrogen Dioxide	INA
Ozone	2.16
Styrene	0.52
Benzene	0.03
TVOC	13.1
Dust	0.7
Other	INA

INA: Information not available



TONER YIELD

GOOD

- The CLX-9350ND's tested toner yields are higher than average for black and competitive for cyan compared to business color models in this speed range tested to date. Black and cyan toner yields also exceeded the manufacturer's rated yields of 25,000 impressions for black and 20,000 impressions for each color. Magenta and yellow yields, however, are below average for competitive units and fell short of the manufacturer's rated yield.
- Tested toner yield, as measured in impressions per gram of toner, is competitive overall.



VALUE

VERY GOOD

- + The CLX-9350ND's lower than average price for comparably equipped models in its speed range, combined with its very good feature set and strong performance, make the model a very good overall value.

SUPPORTING TEST DATA

Test Environment

This product was tested in BLI's 10,000-square-foot U.S. test lab, in an environment monitored by an Extech RH S20 Digital RH/Temperature Recorder and Honeywell Model 61 Seven-Day Temperature/Relative Humidity Chart Recorder. All products lab tested by BLI are powered by dedicated circuits that are protected by ESP (Electronic Systems Protection, Inc.) surge protectors to prevent transient power and communication disturbances from affecting equipment under test.

Test Equipment

BLI's dedicated test network, consisting of Windows NT 4.0, 2000 and Microsoft Exchange servers, Windows 2000 and XP workstations, 10BaseT/100BaseTX network switches and CAT5 cabling.

Test Duration

Products are tested for two months, five weeks of which consists of a durability test during which the product is run at its manufacturer-rated maximum monthly duty cycle, with 25 percent of the test volume comprised of copy jobs and 75 percent comprised of print jobs. BLI's daily test usage is designed to replicate real-world use over an eight-hour workday, and as such includes a mix of various-size documents, simplex and duplex modes, and a mix of short, moderate and long run lengths, and on/off cycles, throughout the day. The durability evaluation also includes testing of the document feeder/scanner in simplex and duplex modes for an additional 20 percent of the monthly maximum volume, evenly divided over the course of the test. Imaging media includes 20-lb. virgin letter, legal and ledger multi-use paper with up to 80% of the volume generated on letter, 10% on legal and 10% on ledger. Recycled multi-use paper comprised of 30%, 50% and 100% post consumer waste is also tested for up to 10% usage of each of the recycled media types.

Tested Configuration

Samsung CLX-9350ND base unit, plus optional PostScript emulation, 3,250-sheet staple finisher, dual-cassette feeder and high-capacity feeder.

Test Procedures

The test methods and procedures employed by BLI in its lab testing include BLI's proprietary procedures and industry-standard test procedures, including a BLI-developed variation of ASTM's 1318-90 Test Method for Determination of Productivity using Electrostatic Copy Machines. In addition to a number of proprietary test documents, BLI uses an industry-standard KATUN test original for evaluating black image quality and test suites from Quality Logic to evaluate applications compatibility. In addition to a visual observation, color print quality is tested using the ANSI standard IT8 Color Test Target, which is read using the Minolta CM503I Spectrophotometer, and samples are analyzed using the CIE XY Chromaticity Diagram. In addition, density of black and color output is measured using an X-Rite 428 Densitometer. Georgia-Pacific Spectrum Multi-Use 20-lb. bond is used in the tests, 10 percent of which is recycled paper containing 30 percent post-consumer content. Image quality is tested using Georgia-Pacific Printing Paper (95 brightness, 22-lb. bond).

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RELIABILITY

PMs/Malfunctions	Service Required	Meter Count (Impressions)	Impressions Between Service
Meter Count (Beginning of Test)*	0		
End of Test Period	150,000		
Total Misfeeds/Misfeed Rate	2/1 misfeed per 75,000 impressions		
Service Calls	0		
PMs	0		
Total Service Calls (incl. PMs)	0		

* Two CLX-9350NDs were each subjected to a 150,000-impression test; one was configured with the staple finisher and the other was configured with the booklet finisher.



MULTITASKING

Primary Function	Secondary Function	PRINT	SCAN	COPY
PRINT		Yes	Yes	Yes
SCAN		Yes	Yes	Yes
COPY		Yes	Yes	Yes

Note: A "Yes" indicates that the user can initiate the secondary function while the primary function is taking place and that no further user intervention will be required for the secondary function to take place.

In addition to a single-user multitasking test, which evaluates a unit's ability to initiate or perform one function while another function is already in progress (see chart above), BLI also tests a multifunctional product's ability to handle multiple jobs that would be likely to stack up in a multi-user networked environment.



PRINT/COPY QUALITY

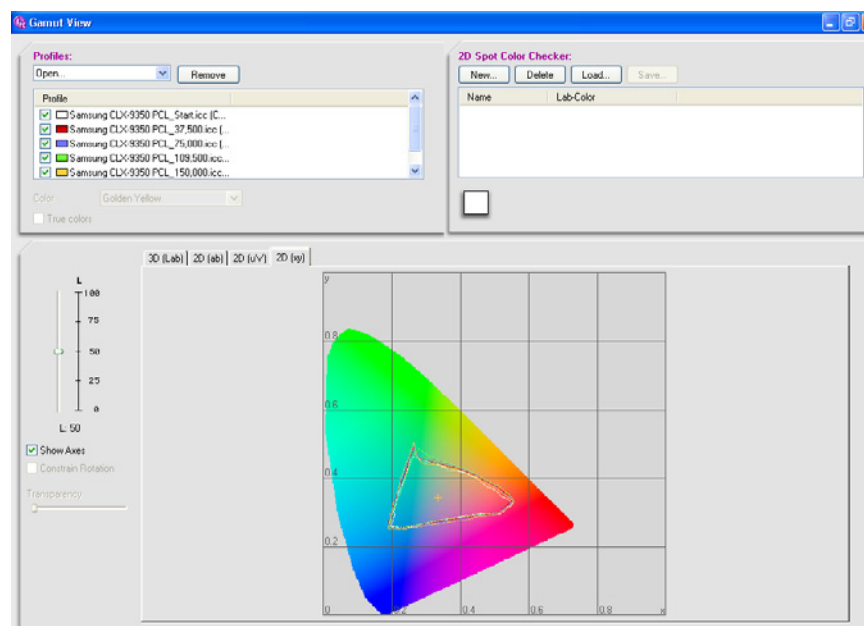
Print Quality

Text	Very Good
Line Art	Very Good
Halftone Pattern	Excellent
Halftone Range	Very Good
Solids	Excellent
Color Business Graphics	Very Good
Color Photographic Images	Very Good
Color Shift	Good

Color Shift

Test Point	Delta E	BLI Rating
37,500	3.67	Very Good
75,000	4.41	Good
109,000	4.95	Good
150,000	5.23	Good

Delta E is a colorimetric measurement assessing the distance between colors. The readings above reflect the average shift of the color gamut from the previous measured point.



The color gamut displayed an increase in the green region occurring at 109,000 impressions and a slight increase in the yellow to red regions.

Color Density Readings

Color	Yellow	Magenta	Cyan
Print Density	0.91	1.26	1.18

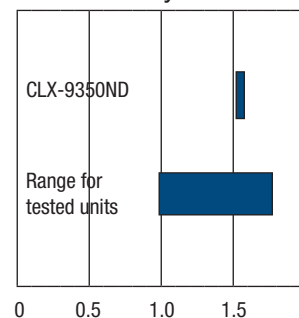
Density of a printed image with blocks of all solid colors (based on the average of two readings for each color).

Black print density:
1.52 to 1.58

Density for units in this class tested to date:
0.98 to 1.78

Measurements are based on four readings corresponding to four different solid black locations on the output. The higher the density reading, the darker the image.

Print Density



Halftone range:

Halftone output was visible from the 4% to 100% dot-fill levels, with distinct transitions between all levels.

Copy Quality

Text	Very Good
Line Art	Very Good
Halftone Pattern	Excellent
Halftone Range	Excellent
Solids	Excellent
Color Business Graphics	Very Good
Color Photographic Images	Very Good

Color Density Readings

Color	Yellow	Magenta	Cyan
Original Density	1.07	1.43	1.52
Copy Density	0.89	1.34	1.02

Density of copied image when tested in "Full Color" copy mode using a KATUN test original containing blocks of all solid colors (based on the average of two readings for each color).

Color Fidelity Readings

Color	Yellow	Magenta	Cyan	Red	Green	Blue	Black
Fidelity	2.43	3.93	3.18	6.42	7.07	10.15	3.58

Color fidelity of a copy to its original (using a KATUN test original containing blocks of all solid colors: tested in walk-up mode using the machine default settings in "Full color" mode and auto exposure settings); average of two readings for each color. Measurements are taken with a Minolta CM-503i spectrophotometer. The closer the number is to 0, the closer the copy's color fidelity is to the test original (based on the average of two readings for each color).

Density of black original:

1.63 to 1.79

Density of copy:

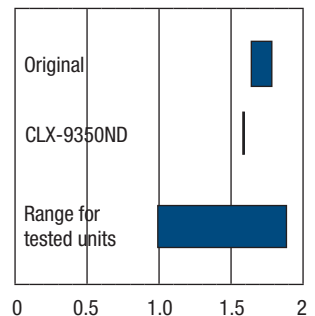
1.59 to 1.59

Range for tested units:

0.99 to 1.89

Measurements are based on eight readings corresponding to eight different solid black locations on the output. The higher the density reading, the darker the image.

Copy density



Halftone range:

Halftone output was visible from the 15% (which is the minimum coverage area on the original) to 100% dot-fill levels, with distinct transitions between all levels.



PRODUCTIVITY*

Job Stream

	SPEED IN PPM		PERCENT OF RATED SPEED	
	Samsung CLX-9350ND	COMPETITIVE AVERAGE	Samsung CLX-9350ND	COMPETITIVE AVERAGE
PostScript Auto Color	16.0	16.7	45.7	53.7
PostScript Black	22.8	24.4	65.1	69.4
PCL Auto Color	21.8	19.9	62.1	62.2
PCL Black	24.4	25.6	69.8	72.9

BLI's job stream includes Word documents, Outlook e-mail messages, Excel spreadsheets, PowerPoint, HTML and Acrobat PDF files, totaling 19 pages. This test simulates the type of traffic a typical device might experience in a real-world, multi-user environment. All of the files are sent to the device as a group, at which time the stopwatch begins; timing ends when the last page of the last file exits the device. Job stream efficiency is determined by the percentage of the rated speed at which the device operates when producing real-world jobs. The closer the rate is to 100%, or if it exceeds 100%, the more efficient the device.

* Productivity evaluation is based on the stapling finisher except for booklet-making productivity, for which the device was configured with the booklet finisher.

First-Copy Time in Seconds

	Samsung CLX-9350ND	COMPETITIVE AVERAGE
AUTO COLOR Platen	12.9	13.1
AUTO COLOR Document Feeder	15.1	13.8
BLACK Platen	10.7	8.2
BLACK Document Feeder	12.6	9.1

Average Productivity for Mixed Color and Black Output

	SPEED IN PPM		PERCENT OF RATED SPEED	
	Samsung CLX-9350ND	COMPETITIVE AVERAGE	Samsung CLX-9350ND	COMPETITIVE AVERAGE
COPY 1:1	24.8	20.4	70.9	68.4
COPY 1:2	21.5	18.0	61.4	59.4
COPY 2:2	23.4	18.8	66.9	60.1
PRINT 1:1	24.9	24.1	71.1	68.9
PRINT 1:2	24.5	21.7	69.9	62.2

Efficiency is tested using a 10-page document, consisting of six black pages and four pages containing black text and color, with the unit in auto-color mode (in which it automatically detects whether the originals are black or color and switches accordingly). In print mode, the document is printed using the PCL driver at 600 dpi. BLI obtains the overall efficiency for each copy/print mode by averaging the efficiency ratings (derived by dividing the tested speed of the device by the rated speed, and then multiplying by 100) for each run length (1, 5 and 10 sets in copy and print modes).

Average Productivity for Black Output

	SPEED IN PPM		PERCENT OF RATED SPEED	
	Samsung CLX-9350ND	COMPETITIVE AVERAGE	Samsung CLX-9350ND	COMPETITIVE AVERAGE
COPY 1:1	27.5	29.2	78.6	82.7
COPY 1:2	24.3	24.2	69.5	68.7
COPY 2:2	24.6	24.8	70.2	70.2
PRINT 1:1	25.6	29.2	73.2	82.1
PRINT 1:2	25.3	24.2	72.2	68.8

Efficiency is tested using a 10-page document in black mode. In print mode, the document is printed using the PCL driver at 600 dpi. BLI obtains the overall efficiency for each copy/print mode by averaging the efficiency ratings (derived by dividing the tested speed of the device by the rated speed, and then multiplying by 100) for each run length (1, 5 and 10 sets in copy and print modes).



SCAN FUNCTIONS

Tested Scan Speed in IPM

	Samsung CLX-9350ND	COMPETITIVE AVERAGE
AUTO COLOR 1:1	46.7	40.8
AUTO COLOR 2:2	31.8	31.6
Black 1:1	47.3	41.4
Black 2:2	32.0	33.3

Files are scanned at 300 dpi in PDF format. Competitive averages represent the average scan speed for devices in this speed range tested to date.

Scan-File Size in KB

FULL COLOR	Normal quality	Draft Quality	Best quality	COMPETITIVE AVERAGE
	1,945.6	1,505.28	298	466.2

BLACK	PDF	COMPETITIVE AVERAGE
	109	66.7

Testing in both modes is conducted with single-page files scanned at 300 dpi in PDF format. Competitive averages represent the smallest file size for devices tested to date.



PRINT DRIVERS

Samsung CLX-9350ND Print Driver Features

Windows XP	PCL 6	PostScript 3
Auto Feature/Device Detection	Yes	Yes
Booklet Printing	Yes	Yes
Collate Sets	No	No
Consumables Gauge	No	No
Delayed Print	Yes	Yes
Max Paper Sources per Job	3	2
N-up Printing	2 to 16	2 to 16
Overlay	Yes	No
Paper Gauge	No	No
Print and Hold	Yes	Yes
Proof Print	Yes	Yes
Quantity Selection	Up to 9,999	Up to 9,999
Reduction/Enlargement	25% to 400%	25% to 400%
Resolution Modes (dpi)	Best Normal Draft Glossy	Best Normal Draft Glossy
Save Settings	Yes	Yes
Secure Printing	Yes	Yes
Watermarks/Custom Watermarks	Yes/Yes	Yes/Yes



TONER YIELD

Tested Toner Yield (5% Coverage per Color)

	Black	Cyan	Magenta	Yellow
Rated Yield (Impressions)	25,000	20,000	20,000	20,000
COMPETITIVE AVERAGE	23,458	15,750	15,750	15,750
Tested Yield (Impressions) ¹	28,001	22,119	17,632	14,412
COMPETITIVE AVERAGE	23,458	24,246	20,236	18,872
Net Weight (Grams)	543.15	309.90	333.70	261.45
Impressions per Gram	51.55	71.37	52.84	55.12
COMPETITIVE AVERAGE	56.17	71.09	59.48	50.24

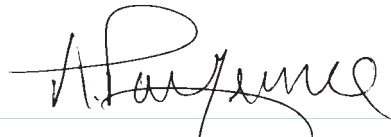
¹ Based on an average of two cartridges per color using BLI's toner yield test original with 5% page coverage.

CERTIFICATE OF RELIABILITY

Awarded to

SAMSUNG ELECTRONICS AMERICA

for the performance of the
Samsung CLX-9350ND
in BLI's in-house durability test.



ANTHONY F. POLIFRONE
MANAGING DIRECTOR



FEBRUARY 2011

DATE

This is to certify that when subjected to an approximately 150,000-impression Buyers Lab durability test in a networked environment, the Samsung CLX-9350ND proved to be a highly reliable product.

BUYERS LABORATORY INC.

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